

Customer No.: 31561
Docket No.: 9720-US-PA
Application No.: 10/604,744

In The Drawings

Applicant has amended FIGs. 2-5.

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REMARKS

Present Status of the Application

The Office Action rejected claims 1 and 3 under 35 U.S.C. 102(b) as being anticipated by Fujiki (U. S. Patent 5,369,379). The Office Action rejected claims 1 and 3 under 35 U.S.C. 102(b) as being anticipated by Yamaguchi et al. (U. S. Patent 6,734,370; hereinafter Yamaguchi). The Office Action rejected claims 2, 4, and 5 under 35 U.S.C. 103(a) as being unpatentable over Yamaguchi in view of Handforth et al. (U. S. Patent 6,876,085; hereinafter Handforth). Applicant has cancelled claim 2 and amended independent claim 1 to recite the features of currently cancelled claim 2. After entry of amendments, claims 1 and 3-5 remain pending in the present application, and reconsideration of those claims is respectfully requested.

Discussion of Office Action Rejections

The Office Action rejected claims 1 and 3 under 35 U.S.C. 102(b) as being anticipated by Fujiki. The Office Action rejected claims 1 and 3 under 35 U.S.C. 102(b) as being anticipated by Yamaguchi. The Office Action rejected claims 2, 4, and 5 under 35 U.S.C. 103(a) as being unpatentable over Yamaguchi in view of Handforth. Applicant has combined original claim 2 with independent claim 1. Applicant respectfully traverses the rejections for at least the reasons set forth below.

The features as for example shown in FIG. 2 include the side circuit, which is on the sidewall of the printed circuit board, and has the varying shape in order to match the impedance between different patterned circuit layers.

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The newly amended independent claim 1 recites the features as follows:

1. A printed circuit board, at least comprising:
a plurality of patterned circuit layers;
an insulation layer between the patterned circuit layers for isolating the patterned circuit layers from each other, wherein the insulation layer and the patterned circuit layers together form a laminated layer; and
at least one side circuit on a sidewall of the laminated layer for electrically interconnecting at least any two of the patterned circuit layers,
wherein the at least one side circuit has a shape structure so that impedances of the sidewall circuits and the patterned circuit layers are matched with each other. (Emphasis added)

The features emphasized in claim 1 are at least not disclosed by the prior art references. It should be noted that the side circuit with varying shape for matching impedance is on the sidewall of the laminated layers, as recited in independent claim 1.

In re Fujiki and Yamaguchi, the side circuit is just for interconnection between the patterned circuit layers but is not designed with impedance matching.

In re Handforth, the Office Action cites Handforth for impedance matching consideration. However, it should be noted that the impedance matching is formed on the substrate 28 and the substrate 10. In Fig. 3, the traces 32 and 34 are on different substrates 10 and 28 for direct contact (col. 3, lines 63-66). Fig. 5 of Handforth discloses the trace 44 on the substrate 10, such as the traces 36 in FIG 3 (col. 4, lines 22-27). In Fig. 6, it shows how to contact the trace 44 and 52 on different substrate 10 and 28 (col. 4, lines 37-42). In other words, the shape of the trace 44 and 52 are designed for overlapping and direct contact between the substrate 10 and substrate 28 (Fig. 2). *Handforth only discloses the impedance circuit design for overlapping*

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and direct contact but never discloses that the impedance matching circuit is formed on the sidewall of the circuit.

When the ordinary skilled artisans take Yamaguchi and consider the impedance issue disclosed by Handforth. Yamaguchi only provides the motivation to form the impedance circuit as a part of the patterned circuit layer. Yamaguchi never disclose how to modify the side circuit of Yamaguchi into an impedance matching part for direct contact. *The design of Yamaguchi is conflict with the side circuit on the sidewall in Yamaguchi.*

At most, Yamaguchi may be motivated by Handforth in considering the impedance matching between the patterned circuit layers. However, *Yamaguchi may form the impedance matching circuit as a part of the patterned circuit layer and the side circuit remains the same structures for only use in connection between the different patterned circuit layers.* The uniform width of the interconnection line 32 on the side 30 is the usual way for the interconnection line 32 (col. 6, lines 56-59). Even if the impedance matching is considered, the impedance matching design can be formed as a part of the trace 28 but not on the interconnection line 32.

Therefore, Handforth does not provide the sufficient motivation to modify Yamaguchi into the present invention as recited in independent claim 1.

For at least the foregoing reasons, Applicant respectfully submits that independent claim 1 patently define over the prior art references, and should be allowed. For at least the same reasons, dependent claims 3-5 patently define over the prior art references as well.

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CONCLUSION

For at least the foregoing reasons, it is believed that all the pending claims 1 and 3-5 of the invention patently define over the prior art and are in proper condition for allowance. If the Examiner believes that a telephone conference would expedite the examination of the above-identified patent application, the Examiner is invited to call the undersigned.

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Respectfully submitted,

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